

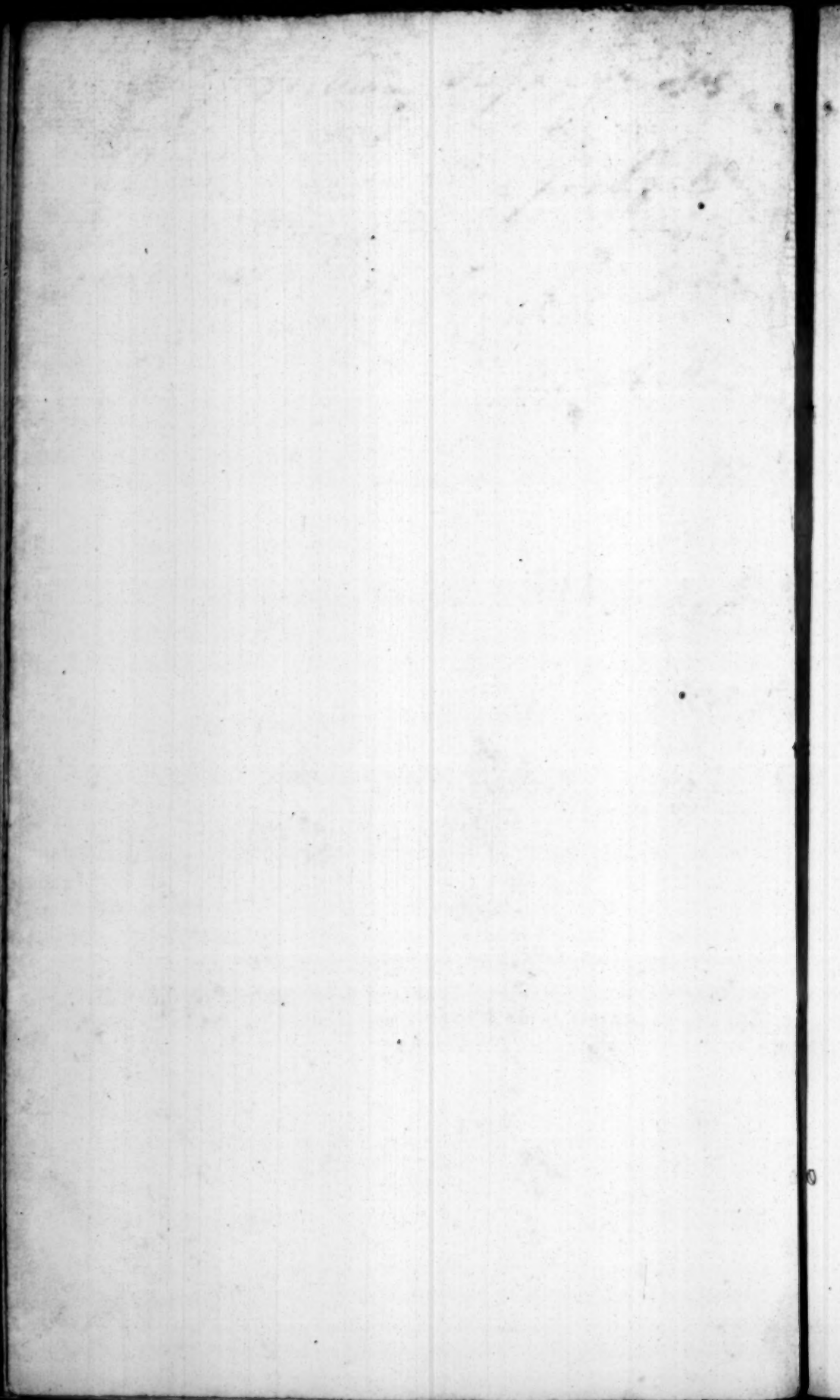
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AN
INAUGURAL DISSERTATION
ON
DIGITALIS PURPUREA,
OR
FOX-GLOVE;

AND ITS USE
IN SOME DISEASES:
SUBMITTED
TO THE
EXAMINATION
OF THE
REV. JOHN EWING, S. T. P. PROVOST;
THE
TRUSTEES & MEDICAL FACULTY,
OF THE
UNIVERSITY OF PENNSYLVANIA,
On the thirty-first of May 1800,
FOR THE DEGREE OF
DOCTOR OF MEDICINE.

—♦—
BY JOHN MOORE, OF PENNSYLVANIA, *R*
MEMBER OF THE PHILADELPHIA MEDICAL AND CHEMICAL SOCIETIES.

—♦—
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TO

CASPAR WISTAR, M. D.

ADJUNCT PROFESSOR OF ANATOMY, SURGERY AND
MIDWIFERY,

IN THE UNIVERSITY OF PENNSYLVANIA,

AND TO

JOHN WILSON, M. D.

OF BUCKS-COUNTY, PENNSYLVANIA;

THIS

DISSERTATION

IS RESPECTFULLY INSCRIBED,

AS A SMALL TRIBUTE

OF

GRATITUDE AND ESTEEM,

BY THEIR MUCH OBLIGED

FRIEND AND PUPIL,

JOHN MOORE.

Rev^d Dr^o William Stephengroves
with the most respectful
good wishes of his friend

The Author



INTRODUCTION.

AS Digitalis has excited a great deal of attention within a few years, and as it has been used in two very different diseases, viz. *dropsy* and *pulmonary consumption* with remarkable success; I have made it the subject of my *inaugural dissertation*.

I am, however, fully sensible of the truth of the following observation made by Dr. Withering. "I wish it was easy to write on digitalis. I despair of pleasing myself or instructing others, in a subject so difficult. It is much easier to write upon a disease than upon a remedy. The former is in the hands of nature, and a faithful observer, with an eye of tolerable judgment, cannot fail to delineate a likeness. The latter will ever be subject to the whims, the inaccuracies and the blunders of mankind."

As there is very little pretension to originality in any part of the following *essay*, as the parts which are extracted from authors, can be easily distinguished by every medical reader, and as I here make

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particular acknowledgments to those authors, I hope to be excused for omitting minute references to them.

Most of the experiments which are related, were repeated several times, but as their results were similar, or nearly so, to those mentioned, and as I wished to be as concise as possible, I have not detailed them.

A
DISSERTATION
ON
DIGITALIS, &c.

—♦—
CHAP. I.

A short description of the Plant.

THIS plant is the *digitalis purpurea** of Linnæus. It is very common in England, and is found also on different parts of the continent of Europe. It may be cultivated to advantage in the United States. It belongs to the 2d order of the 14th class, or the dydynamia angiospermia of Linnæus. The essential characters of the genus are, *Cup with 5 divisions. Blossom bell shaped, bulging. Capsule egg shaped, 2-celled. Chives. Threads crooked, white. Tips yellow. Pointal. Seed-bud, greenish. Honey-cup at its base more yellow. Summit cloven.*

S. Vefs. Capsule not quite so long as the cup.

Root. Knotty and fibrous.

Leaves. Slightly, but irregularly serrated, wrinkled; dark-green above, paler underneath. They

* The trivial name *purpurea* is not a very happy one, for the blossoms though generally purple are sometimes of a pure white; I shall therefore, hereafter, call it simply *digitalis*.

resemble in some degree, the leaves of mullein;* and it has been gathered for digitalis. Lower leaves egg-shaped; upper leaves spear-shaped. Leafstalks fleshy, bordered.

Flowers. Numerous, mostly growing from one side of the stem, and hanging down one over another.

Floral leaves. Sitting taper pointed. The numerous purple blossoms hanging down, mottled within; as wide and nearly half as long, as the finger of a common-sized glove, are sufficient marks whereby the most ignorant may distinguish this, from every other plant.

It grows in dry, gravelly or sandy soils, particularly on sloping ground. It is a biennial, and flowers from the middle of *June*, to the end of *July*.

No cattle are observed to eat it. The root, the stem, the leaves and the flowers have a bitter herbaceous taste.

This plant ranks among the *Luridæ*, one of the Linnæan orders in a natural system. It has for congeners, nicotiana, hyosciamus, datura, solanum, &c.

Fuchsius, who wrote in the year 1542, is the first author who notices it. From him it received its name of *Digitalis*, in allusion to the German name of Finger-hut, which signifies a finger-stall, from the blossoms resembling the finger of a glove.

Sensible qualities. Leaves bitter and nauseous.

* Verbascum of Linnæus.

Sensible effects. In large doses it produces sickness, nausea, vomiting, vertigo, confused vision, increased secretion of urine, with a desire to discharge it, and a tendency to salivation.

Every part of the *digitalis* possesses similar properties, but the leaves, according to Dr. Withering, are much the most efficacious part; and I believe, that inattention to his directions, is a principal source of failure among physicians.

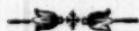
As Dr. Withering's treatise may not be in the hands of every one who may read this *dissertation*, I shall give his method of preparing it in his own words.

"The leaves should be gathered when the plant is flowering. The leaf-stalk and mid-rib of the leaves should be rejected, and the remaining part should be dried, either in the sun-shine, or on a tin pan or pewter dish before the fire.

"If well dried, they readily rub down to a beautiful green powder, which weighs something less than one-fifth of the original weight of the leaves. Care must be taken that the leaves be not scorched in drying, and they should not be dried more than what is requisite to allow of their being readily reduced to powder."

As he mentions a heat barely sufficient to make them suitable for powdering, and as it is certain that its active quality may be greatly dissipated, by being long dried before the fire, we have great

reason to believe, that the method of curing it, may be very often a cause of its failure, since we see how much care is necessary.



CHAP. II.

Of the Primary Effects of Digitalis on the Human Body.

MANY of the authors who have written on this subject, have taken notice of its remarkable effect on the arterial system; but their observations have been principally confined to its power of diminishing the frequency of the pulse. In order to ascertain if possible the principles by which its effects were to be explained, I instituted the following experiments with the dried leaves picked in the manner recommended by Dr. Withering.

As its effects can be more clearly ascertained in a state of health, than when complicated with the symptoms of disease; and as its operation in morbid affections will be more properly considered after its mode of action has undergone examination, I shall here confine myself to an enumeration of its effects on the body in a state of health, and particularly of its primary effects on the *arterial system*.

EXPERIMENT I.

Having for two days previously had some pain in my head, at two o'clock, P. M. half an hour after eating a light dinner, I took one grain and a half of digitalis made into pills with the mucilage of gum. Arab. my pulse beat 72 strokes in a minute, and the following changes were observed in it; it was reckoned immediately before, at, and after the periods mentioned in the first line of the following table:

<i>In</i>	5 10 15 20 25 30 35 40 45 50	<i>min.</i>
<i>P. beat</i>	72 76 76 78 78 76 78 74 72 72	

<i>In</i>	55 60 70 75 80 85 90 105 120	<i>min.</i>
<i>P. beat</i>	70 68 66 64 60 60 58 60 60	

Twenty minutes after taking the medicine, I felt an increase of the pain of my head, accompanied with pain in my eyes. In 45 minutes, some increase of fulness in my pulse was very perceptible. Sixty minutes having elapsed, my pulse lost the increase of fulness, and my stomach was slightly affected with nausea. In 100 minutes I felt but very little pain in my head. During the remainder of the afternoon, I had several times a little nausea, which however soon went off, and in the evening the pain of my head returned as before.

EXPERIMENT II.

At ten minutes before twelve o'clock, A. M. I took three grains of digitalis;* my pulse beat 60 strokes in the minute, its natural standard. In 20 minutes it was increased six strokes; in 35 minutes it was smaller, and it continued between 66 and 60 for 75 minutes, when it remained at 62. I had during the experiment several times a slight nausea.

EXPERIMENT III.

At ten o'clock, P. M. three hours after drinking a little coffee, and eating some bread and butter, I took three grains of digitalis; my pulse beat 60 strokes in a minute:—

In | 5'10'15'20'25'30'35'40'45'50'55'60'65'80' min.
P. beat | 60|60|60|56|55.54|58|58|56|56|58|60|60|50|

In 25 minutes had considerable nausea, and my pulse was diminished in force. In 60 minutes nausea continued, and my pulse was a little fuller. In two hours the nausea was so great that it was with difficulty I could avoid vomiting, and my pulse did not appear (for it was not counted) to be more than 40 strokes in a minute.

EXPERIMENT IV.

At twenty minutes before seven o'clock A. M. my worthy friend and colleague Dr. Enoch Wilson

* I may remark here, that in all my experiments, I took and gave the medicine in the form of pills, made with the mucilage of gum. Arab.

took (fasting) three grains of digitalis ; he had some pain in his head, and his pulse beat 64 strokes in a minute :

In | 5|10|15|20|30|35|40|45|50|55|64|75| *min.*
P. beat |66|66|68|70|72|72|72|70|70|68|68|68|

In |85|90|95|100|105|110|115|120|125|135| *min.*
P. beat |66|62|62|62|62|62|60|60|58|58|

In 15 minutes he had a sense of heat at his stomach. In 25 minutes his pulse was evidently fuller, and the pain of his head somewhat increased. In 60 minutes had some uneasiness at his stomach, with an increased flow of saliva, which continued as long as the disorder of the stomach. In 65 minutes his pulse was diminished in force. In 84 minutes had some nausea which continued for 130 minutes, when his pulse was much smaller. He had some nausea several times during the remainder of the day, and three copious evacuations from his bowels, but had some doubt about ascribing this effect to the medicine, because he had caught a cold.

EXPERIMENT V.

To George Tavener, aged 40, a robust healthy man, who had been accustomed to drink freely of ardent spirits, I gave four grains of digitalis, ten minutes before seven o'clock A. M. and before he

had eat any breakfast or drank any liquor:—his pulse beat 68 strokes in a minute.

In | 5|10|15|20|25|30|35|40|55|50|60|70|80|90|100|*min.*
P. beat | 68|68|72|72|72|72|70|70|72|72|72|70|68|68| 68 |

In 20 minutes he complained of vertigo. In 40 minutes had some nausea. In 60 minutes his pulse was weaker than before the experiment. In 80 minutes was very sleepy; which might in part have been owing to his sitting still, as he is generally very active. During the remainder of the day he had three copious discharges from his bowels. He observed to me, that his sensations during the day were very similar to those he experienced after drinking freely of ardent spirits. I am induced to believe that these sensations were produced by the digitalis, from his making the observation without being interrogated; nor was any idea of such effect hinted to him previously: they were not occasioned by spirits, because I cautioned him against drinking any during that day, and I could depend upon his veracity.

EXPERIMENT VI.

Twenty minutes after 6 o'clock, A. M. I gave to Thomas Maborough (a black man aged 48) six grains of digitalis; his pulse beat 90 strokes in a minute, its natural standard.

In | 5|10|12|20|25|30|35|50|55|60|70| *min.*
P. beat | 90|90|90|84|86|84|82|84|80|80|

In | 75|80|85|95|105|110|120|130|140| *min.*
P. beat | 79|79|78|78| 80| 79| 70| 70| 70|

In 55 minutes after taking the medicine, he was so sleepy that it was with difficulty he could keep awake. In 60 minutes he had some nausea. In 80 minutes the nausea was increased, accompanied with pain in his stomach. In 120 minutes the sickness abated and the pain descended from his stomach to the intestines. In two hours and a half he was perfectly well; and the digitalis did not increase any of the excretions.

I gave digitalis to the same man several times, in smaller doses, with exactly the same effects, only in a more moderate degree; it did not in any instance raise his pulse above the natural standard.

EXPERIMENT VII.

Fifteen minutes before six o'clock, A. M. Dr. Enoch Wilson took three grains of digitalis, before he breakfasted. His pulse beat 60 strokes in a minute, its natural standard.

In | 5|10|15|20|25|30|35|40|45|50|55| *min.*
P. beat | 60|60|62|64|66|68|70|70|71|72|68|

In | 60|66|76|90|100|112|120|130| *min.*
P. beat | 68|68|68|68| 64| 62| 60| 60|

In 20 minutes he felt some uneasiness at his stomach. In 28 minutes his pulse was increased in force, and he had a sense of heat at his stomach, and vertigo, with a confusion of mind. In 35 minutes he had a sense of fulness in his head, and the vertigo continued. In 70 minutes his pulse was considerably weaker. Between 60 and 100 minutes, he had an unusual degree of languor, with vertigo; also, great thirst, which was very uncommon for him at that time in the morning. During all the experiments, and particularly those made on Dr. Wilson, great care was taken to avoid every circumstance that could have any influence on the *circulation*, and therefore motion was especially avoided.

EXPERIMENT VIII.

I took three grains and a half of digitalis, early in the morning, which raised my pulse eight strokes in 15 minutes; and in 58 minutes it was reduced ten strokes: its effects on my stomach were similar to the other experiments; my pulse, in 50 minutes, was fuller and stronger, and I had some pain in my head, which, however, soon went off.

I took several doses of digitalis and gave a considerable quantity to other persons, who were in good health, with results so similar to those above related, that I do not think it necessary to repeat them.

I might here insert four experiments, which were communicated to me by my friend, Mr. Joseph Trent,* of Virginia, and which were conducted with great accuracy; but as their events are very analogous to those I have made, it will not, I imagine, be considered as essential to detail them minutely; I shall therefore, refer to them presently, as if related.

The opinions of physicians, relative to the operation of digitalis, were unanimous in favour of its sedative power, without regard to its primary effect; and it was considered as a sedative medicine, from the time of its first introduction into the materia medica, until the winter 1798-9, when Dr. Barton taught, in his lectures, that notwithstanding all that had been said in proof of its lowering or diminishing the frequency of the pulse, he was induced to believe that it was a stimulant. My experiments, or at least, the first, second, fourth, fifth, seventh and eighth, lead to a very similar conclusion, and seem sufficient to establish the opinion above stated. If we mean by a stimulant, a medicine which will always increase the force and frequency of the pulse, digitalis may not be entitled to that appellation; but, if I mistake not, there are medicines denominated stimulants, or incitants, which will not, on every constitution and habit,

* Mr. Trent had chosen Digitalis for the subject of his *Inaugural Dissertation*, but when he heard that I had also chosen it, he very politely favoured me with his experiments, for which I wish him to accept of my acknowledgments.

produce the same effect of accelerating the pulse. I am inclined to believe, that opium is one of these medicines, whose primary effect in particular constitutions, will be to depress instead of raising the pulse: and this opinion is very much strengthened by recollecting the notion which was so long maintained of its sedative property.

From attending particularly to the experiments of Dr. Crumpe, I do not find the stimulating property of opium (as to the heart and arteries) so great, as some authors assert it to be; we find, for example, from his sixth experiment, that his pulse was only increased six strokes; in the seventh, the young man's pulse was increased six strokes; in the eighth, his own pulse was increased eight strokes, and in the seventeenth, ten strokes; which was the greatest height it arrived at.

If we attend to the fourth and seventh experiments which I made with digitalis, we may observe, that in the former, my colleague's pulse was raised eight strokes in half an hour, and in the latter, twelve strokes in fifty minutes, from the time of taking the medicine. In the first and second experiments, my pulse was increased six strokes, and in the eighth, eight strokes. In the fifth experiment, George Tavener's pulse was raised four strokes.

The experiments of Mr. Trent, tend likewise to corroborate the idea of its stimulating power, for in the three first, his pulse was increased in frequency; and in the fourth, it was diminished in frequency, but increased in force.

In the other experiments, it is true, that it did not raise the pulse, but in most of them an evident fulness was perceptible, during its primary operation on the sanguiferous system; and a very eminent author does not ascribe to opium any other effect on the arterial system, than that of lessening the frequency, and increasing the fulness of the pulse; and yet this same author classes it among the stimulating medicines.

There is little doubt, that a very considerable similitude exists between the operation of *opium* and *digitalis*; perhaps, as much as there is between *conium maculatum*, *nicotiana*, *hyoscyamus*, *datura*, *solanum*, and *opium*. Let us take a short view of their similar effects on the living system. Opium increases the frequency and fulness of the pulse; *digitalis* very frequently does the same. Opium produces sometimes an increased flow of saliva; so will *digitalis*. Opium produces profuse perspiration; one of the patients in the Alms-house, who took *digitalis*, had for the first three or four days, more copious perspirations than before. Opium is sometimes a diuretic: this is one of the most prominent effects of *digitalis*. Who has not seen opium in some instances prove laxative? *Digitalis* purged in several of the experiments, when I gave it to the healthy subject. Opium in a large dose, produces vertigo, confused vision,* thirst and stertorous

* Jesse Scott, in the Alms-house, complained very much of his sight being impeded during part of the time that he took *digitalis*.

respiration; the same effects follow large doses of digitalis.

Analogical reasoning is, perhaps, on no subject less tenable than on medicine; when the supposed certainty or doubt of any one point, may prove destructive to many patients. If, however, we were permitted to make use of it, we should derive great support from comparing our medicine with those which are allied to it by *botanical affinity*, and which are acknowledged to be stimulants: they were mentioned in the description of the plant.

From saying that in many respects the operations of opium and digitalis are similar; let no person suppose, that I mean to attempt to explain their operations on the *nervous system*. The former of these has employed the ingenuity of the most learned physicians for generations long since past; and notwithstanding all that has been done on this very interesting subject, much yet remains to do. Perhaps we may look forward for a satisfactory explanation of all the peculiarities in the operation of opium, to generations or probably ages yet to come.

With regard to the operation of digitalis I am alike unqualified to offer any explanation. Some of the preceding experiments, and subsequent cases, show very clearly, the wonderful power it possesses in certain circumstances, of lessening the frequency of the pulse: the manner in which it does this must remain a secret, until physiologists acquire more

certain ideas of the laws, functions, connections and dependencies of the *nervous system*, and its influence over the *arterial*.



CHAP. III.

On the use of Digitalis in Diseases.

IF we attend to the history of digitalis, since it has been considered as a medicine; we shall find, that from the sixteenth century to nearly the present period, it furnished a subject for applause to one practitioner, and for unqualified condemnation to another. It is somewhat extraordinary, that its diuretic property should have been so long overlooked; for no writer has noticed it, I believe, previous to the year 1770. Anterior to that time, they confined themselves principally to its use in epilepsy and scrophula; and in the latter of these it has been particularly famous.

Haller mentions several hereditary instances of this disease, said to have been cured by it: six or seven spoonsful of the decoction produce nausea and vomiting, and purge; not without some marks of a deleterious quality. The same author likewise mentions its use in gout and rickets, in the form of ointment and in powder. *Haller's hist. stirp. indigen. Helvet.*

Ray and Boerhaave, mention its operation as generally deleterious. Dr. Withering, I believe, was the first physician who treated dropsies success-

fully with digitalis; and his practice is sufficiently confirmed by every practitioner who has used the medicine in the manner he directs; particularly in that species of dropsy called *anasaræ*.

Among other diseases, digitalis has been recommended in *phthisis pulmonalis*, or consumption of the lungs. Dr. Salmon, who wrote at the commencement of the present century, speaks of it as a specific in *phthisis*; and Dr. Withering has given us a manuscript note of a Mr. Saunders, found in Parkinson's Herbal, which mentions consumptions as infallibly cured by a decoction of fox-glove leaves in water, or wine and water, taken for constant drink. The Doctor's opinion of it (notwithstanding his expressed wish that it may be farther tried in this disease) was not, it is true, very encouraging, but it should be recollected, that even with him it succeeded in one case (No. CXX.) that it relieved another (No. XL.) very far advanced; and that the remaining cases in which it was given by him were lost before recourse was had to digitalis.

Dr. Darwin and Sir George Baker directed their attention particularly to its use in pulmonary consumption; but they were somewhat disappointed in their expectations.

Within a few years our medicine has excited the notice of Dr. Beddoes who tried it without much benefit; but two of his correspondents, Drs. Fowler and Drake have been much more successful with it. The latter of these gentlemen, (Dr. Drake,) has

communicated two cases to Dr. Beddoes, which the Doctor has published in a work entitled, *Contributions to physical and medical knowledge*. As these cases are accurately described, and appear to have been genuine *phthisis*, and as the books which contain them are very scarce, I shall take the liberty of giving as brief a detail of them as possible.

The first case which Dr. Drake relates was of a Mr. James Marris, aged 16, who complained of considerable difficulty of breathing upon motion, and of pain in the right side. He had a frequent short cough, attended with a copious expectoration of what appeared, and upon trial, with the vitriolic acid and caustic alkali, proved to be in great proportion pus; it was dense, foetid, and occasionally mixed with blood. Pulse 120, and the morning and evening exacerbations, especially the latter, strongly marked. Great emaciation and prostration of strength. Tongue clean. Thirst not considerable. Appetite not impaired. Belly regular. Sleep interrupted, and he could not lie with ease on his left side. Slight perspirations towards morning. Skin hot and dry. Shivering fits every two or three days. Urine high coloured. Had an hereditary predisposition to *phthisis* from his relations. He was evidently likewise of the form and habit which physiologists consider as predisposing to tubercular consumption.

June 26th, pulse still 120, with great debility, and the symptoms increased. He took the following prescription.

R. Foliorum digitalis purpureæ in pulverem
crassum trit. unc. i. Spiritus vini rectificati et Aquæ
puræ a a unc. ii. Digere leni calore, sæpe agitans
per horas xxiv, et cola.

R. Kali p. p. scrup. i.

Succi limonis unc. fs.

Aquæ puræ drachm. vi.

Tinct. digitalis purpureæ gtt. xv.

Fiat haustus primo mane et horis duabus ante
prandium sumendus.

Ordered a little wine and animal food. He con-
tinued this medicine gradually increasing the tinc-
ture of digitalis until the 5th of July, when his
pulse was reduced to 76; and all his symptoms mi-
tigated.

R. Infusi cinchonæ unc. i fs

Acidi vitriolici diluti gtt. x.

Tinct. digitalis purpur. gtt. xxxv.

Fiat haustus mane et meridie sumendus.

July 17th. He took 50 drops of the tincture
twice a day; with more wine and animal food.
His pulse was reduced to 44. Expectoration was
very much diminished; and he was in every respect
much better. 22d. Pulse 40, intermitted after
every third stroke; doses of the tincture diminished
to 40 drops twice a-day. His pulse continued at
40 and from that to 50 until the 15th of August,
when it had not been beyond 50 for better than
four weeks. From that time he took the infusion
of Peruvian bark with quassia, elix. vitriol. and the

tinct. of digitalis. His pulse gradually returned to its natural standard, every symptom disappeared, and he was on the 29th of August in all respects perfectly well.

The second case. September 10th 1797. Mr. George Grimes, aged 19, complained of very acute pain in his right side, which was increased by expectoration; he had incessant cough, and great difficulty of breathing, accompanied with frequent expectoration, which was evidently purulent, and very foetid.

Pulse 120 and hard. Complexion very florid; tongue foul; thirst great; appetite much impaired; body regular; urine high coloured and depositing a copious sediment; little or no rest; frequent shivering fits, and his health was rapidly declining. He had been liable for many months to slight pulmonary complaints, as cough, hectic flushings, and occasional expectoration. His father, mother and sister all died of *phthisis pulmonalis*.

℞. Kali p. p. scrup. i.

Succi limonis q. f.

Lactis amygdalæ unc. i.

Tinct. Digitalis purpur. gtt. xx.

Fiat haustus mane et meridie sumendus.

℞. Mucilaginis sem. cydani mali et aquæ cinnam. unc. iii. m. et sumat cochleare largum urgente tussi.

On the 18th of September, his pulse was reduced to 50, and he was in every respect much better. Ordered a decoction of P. bark and diluted vitriolic acid, with the tincture of digitalis. On the 19th, pulse 48; 29th, pulse 44. He relapsed on the 9th of October, and his pulse rose to 108; but by the 19th, he was again restored to health, and his pulse 50: he was allowed animal food, wine and porter, and continued in good health.

In the first of the above cases, not any sickness was induced during the whole course of the cure. In the second case, a sickness and vomiting came on when the tincture was increased to 48 drops twice a day, but these symptoms readily disappeared when the medicine was omitted for a short time. In Mr. Marris's case, one day when his pulse was below 50, from a wish to ascertain the result, the two doses of the tincture were omitted, and his pulse next morning beat 112; whereas in Mr. Grimes's case, though the digitalis was entirely omitted on the 24th of September in consequence of the nausea, and on the 2d of October, the pulse had not risen beyond 48.

Doctor Fowler has also related several cases of *phthisis*, in which he gave digitalis with great benefit: he declares that he had better success than *a priori* he had reason to expect.

The following case was communicated to me by my very worthy preceptor Dr. Wistar; I will relate it in his own words.

" A young gentleman about 21 years of age, who had lost a brother and several relations with phthisis pulmonalis, was attacked with a severe catarrh in the West-Indies, in consequence of exposure to cool air, during sleep. About two weeks after the commencement of the disease, he arrived at Philadelphia, affected with fever, great dyspnæa, and frequent cough, his pulse full and much irritated.

" In consequence of the usual antiphlogistic treatment, the cough was removed, and the dyspnæa diminished in a small degree, but the pulse remained in a state of extreme irritation. Evacuations and diaphoretic remedies, had no effect but that of reducing the strength of the pulse, for the frequency and quickness continued undiminished during several weeks, in which time his muscular strength declined, so that he was unable to sit up more than half an hour in the day, and he became extremely emaciated; his skin being very dry, the cuticle peeled off from the palms of his hands and the soles of his feet. It is however to be remarked, that he had neither chills nor sweats, and that although he was not free from uneasiness about the thorax, the sensations were so obscure, that he could not describe them. In this situation, I began the use of digitalis, and exhibited the powder of the leaves, made into pills with conserv. rosarum. In doses of two grains, it affected the stomach and bowels; but he took four or five doses of

one grain each, during twenty-four hours, without inconvenience. After taking about forty grains in this manner, his pulse became much less frequent, and the irritation and quickness went off entirely; in a few days it became unusually slow and irregular, and by the steady use of digitalis, varying it from three to eight doses in twenty-four hours, it was kept in this state. In the course of two weeks, he perceived himself much stronger, and the uneasy sensations about the breast were gone, his flesh had also increased; being greatly encouraged by these circumstances, he persisted steadily in the use of the medicine, and by the end of three or four weeks more, walked at his ease about house, rode out, and appeared like a convalescent, labouring only under the debility induced by previous disease. Soon after this he went into the country, and, in consequence of nausea, from redundancy of bile, discontinued the medicine suddenly; this alteration produced no change in his health, and I have been informed that he is now perfectly well, having omitted the medicine for two months.—His diet consisted of milk and vegetables.—The pulse continued irregular, during the whole time of the exhibition of the digitalis, varying from 35 to 70 in the minute, and never appearing to beat at the same rate during one minute.”

In the Philadelphia Alms-house, where a number of patients are admitted annually, with *phthisis pulmonalis*, and consequently a considerable number

fall victims to that unconquerable disease ; a medicine, which has been used successfully even in a few instances, demands particular attention ; accordingly, the digitalis was exhibited in several cases of *phthisis* since last February. I shall relate a few of these cases, but do not think it necessary to detail all the symptoms of each case : 1st, because they would occupy more space than the limits of this dissertation would admit of, and 2dly, because the physicians of the house saw them, and had no hesitation in pronouncing them confirmed *phthisis*.

C A S E 1st.

Eleanor Wells, aged 40, was admitted into the Alms-house, as a patient, on the 15th of February, 1800. The history which she gave of her case was the following : at the commencement of the winter season she was attacked with pleurisy, for which she was bled twice, and took some medicine which relieved her considerably, but not entirely ; owing as she supposed, to her being obliged to spend a great part of her time in a damp cellar. She, however, so far recovered as to be able to attend to the duties of a small family, but was harrassed constantly by a cough and pain in her breast. In this state she remained, till about eight weeks previous to her admission, when all the symptoms were greatly increased. When Dr. Wilson saw her, she complained of a fixed pain immediately under the sternum, had a very troublesome cough, accompa-

nied with a copious expectoration, of a substance which appeared to the eye to consist of pus ; great heat of the palms of the hands and soles of the feet, together with profuse night sweats ; flushed cheeks in the afternoon, chills and fever, which, however, did not observe the stated periods, that a true *hectic* commonly does. When Dr. Church visited her, which was soon after her admission, from the above and other circumstances relative to her case, he believed that she laboured under genuine *phthisis* ; and ordered her to take a grain of the powdered leaves of *digitalis* three times a day, and a blister to be applied to the breast. After the use of these remedies for a few days, she was much relieved, the medicine was therefore persisted in, and the dose gradually augmented to two grains three times a day, beyond which it was never carried, for the sickness induced by it was so distressing as to forbid more. The medicine was continued till the latter end of March, when she no longer complained of the pain of the breast ; her cough and night sweats were gone ; and in short, every unfavourable symptom had disappeared, and she only remained debilitated, for which she took a decoction of Peruvian bark ; was allowed a little wine and animal food, which completely restored her to health, and she was discharged cured, on the 14th of April following.*

* This woman said that her parents and several of her relations, died of consumption.

It must be remarked, that the above mentioned woman lost about twenty ounces of blood at three bleedings, during the time of her taking digitalis, and took occasional laxatives; these remedies, no doubt, aided the digitalis in effecting a cure. A constant effect of the medicine was to produce sickness at stomach, which she complained much of; but the relief she experienced was so great, that she was very willing to continue it; it also produced languor and a great degree of debility.

C A S E 2d.

John Potter, aged 25, was affected in the summer of 1799, with a pain in his *spine*, and a derangement of one of the *dorsal vertebrae*, which was succeeded by a paralysis of his lower extremities. July 25th 1799, he was admitted into the Alms-house, and treated for a diseased spine. In October following, he was seized with a violent pain in his breast, burning in the palms of his hands and soles of his feet, flushings of his face, night sweats, &c. He was bled several times and blistered, and used some other remedies, which relieved him for some time. February 17th 1800, all his symptoms having very much increased, so as to become a genuine *phthisis* far advanced; he was ordered to take one grain of digitalis three times a day. 24th, the medicine was increased to one grain and a half three times a-day. He continued this until the 24th of March, with some benefit,

but it was then omitted on account of a *diarrhæa*, which supervened at that time; and he was ordered to take a cretac. mist.

April 2d, his *diarrhæa* was relieved, but all his *pulmonary* symptoms increased; pulse 80 and quick, with some hardness; he was ordered to take four grains of digitalis daily. The medicine not being very good, it was increased gradually without any very material change, excepting a diminution of the cough, until he took twenty-three grains in a day; this quantity produced very distressing sickness during the succeeding night; and his urine, which was before slightly increased, was then diminished in quantity; his pulse as before; cough better. 8th, pulse 80, very full and strong; complained of vertigo, and drowsiness. He continued to take from four to six and eight grains of stronger digitalis daily, as his stomach would bear it, till the 15th, when his pulse was 74, softer and less quick; perspiration at night diminished, cough not troublesome; expectoration diminished from a quart of fluid, evidently purulent, down to half a pint in 24 hours.

16th, Pulse 78, soft and regular; he rested well last night; less perspiration; cough better. Ordered an infusion of Peruvian bark with the elixir of vitriol, and one grain of digitalis, three times a-day. He continued the medicine with an abatement of all his pulmonary complaints, till the 21st, when his pulse was but 54, full and irregular; continues the infusion of bark, &c.

22d, pulse 48, irregular with an intermission after every third stroke; continues the medicine. Ordered a glass of Sherry wine three times a-day; in the evening of the same day, his pulse rose to 100;* has taken two doses of the infusion, says he is better.

24th, pulse 52; had a violent pain in his face and jaw, which was induced by taking cold.

25th, pulse 48, irregular; continues the wine and digitalis; in every respect much better; appetite good; no cough; expectoration diminished to a gill in 24 hours. 26th, pulse 72, small; the pain in his face and jaw has returned. Ordered a blister which very much relieved him; continues the digitalis.

May 3d, Pulse 66, soft and regular; has not had any pain in his breast for more than three weeks—no burning in the palms of his hands—cough entirely gone—expectoration amounts to three table-spoonsful in 24 hours. He was this day discharged from the Alms-house to go into the country: he took a quantity of digitalis in order that he might omit it gradually. I have not heard from him since he was discharged, but think it very probable, if he can use moderate exercise, his *pulmonary* disease will be entirely cured.

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* I examined the pulse morning and evening, of the cases wherein I mention its effects on the pulse, but cannot be so minute as to detail them all.

C A S E 3d.

Jesse Scott, aged 43, was admitted into the Almshouse on the 7th of April 1800. About two months before, he was attacked with *pneumonia*, for which he had no medical assistance, and took nothing but two small vials of medicine: he did not know what they contained. Since that time he has had a very distressing cough, which is now accompanied with a very copious expectoration, amounting to three pints of fluid, mixed with pus, in 24 hours—occasional flushings and chills—burning in his hands and feet—night sweats—pain under the right scapula—very much emaciated. His belly regular—tolerable appetite. April 9th, his pulse 92; ordered the following medicine:

℞. Sal soda scrup. i.

Tinct. digitalis saturat. gtt. xv.

Aquæ cinnam. unc. fs. Fiat haustus mane et meridie sumendus.

13th, Pulse 80, hard and quick; very profuse perspirations at night; expectoration still very copious; body regular; he is able to walk across the ward, but with great difficulty. Ordered to continue the draught, increasing the tincture of digitalis five drops every dose. 16th, Took one hundred drops of the tincture yesterday at two doses; pulse 80; passed a restless night; complains of griping; expectoration and cough better. Ordered to take 50 drops of tincture twice a-day, without any of the soda. 17th,

pulse 80; griping more severe accompanied with some *diarrhæa*; cough better; expectoration greatly lessened. He took a dose of *oleum ricini*, which relieved the griping, and he took likewise a dose of the tincture at noon. 18th, pulse 80; complains of great pain in his belly with nausea and *diarrhæa*. Ordered to take one grain of opium immediately, which relieved him. 19th, Ordered to take 40 drops of the tincture twice a-day and increase it as before. 20th, pulse 80; has taken 55 drops of the tincture at a dose; pain under the *scapula* better; very profuse perspirations at night; cough still better; appetite good. 21st, pulse 51, full and irregular with a pause after every sixth stroke. Other symptoms as yesterday. 22d, morning, pulse 80; rested well last night; perspirations very much diminished; takes 60 drops twice a-day; complains of vertigo and drowsiness after taking the medicine. Allowed a little animal food. 23d, pulse 54, has considerable nausea; complains of his vision being obstructed, and says he has had more or less of it for three days past; it comes on at 10 o'clock in the morning, and goes off between 3 and 4 in the afternoon. 30th, pulse 60; takes 50 drops of the tincture twice a-day. May 11th, pulse varies from 46 to 78; has no obstruction in vision; expectoration diminished to about a gill in 24 hours; no night sweats; very little cough: in short, he is so much better, and his strength has so much increased, that

there is good reason to expect he will be perfectly restored to health.

The above cases shew very decidedly the wonderful dominion which digitalis possesses over the *heart* and *arteries*; and also that *phthisis pulmonalis*, even when confirmed, is not as it has been generally considered, necessarily an incurable disease.

Digitalis was exhibited in several other cases of *phthisis* with manifest advantage; its good effects were especially remarkable in relieving the cough, and diminishing the expectoration; these cases, however, have all relapsed, and will probably fall victims to the disease, except one, who was lately discharged very much relieved; but as he used other remedies, we could not ascribe the whole of the benefit he experienced to digitalis alone.

I am very far from being of opinion that digitalis ought to be considered as infallible, in cases of pulmonary consumption; but that it may be regarded as a very proper remedy in some cases, and is worthy of attention in every one, few I think will deny.

F I N I S.